

Arkema Facility - Harvey Response

Crosby, TX

Arkema Inc.

September 4, 2017

Project #109489 Summary

1.0 Introduction

As a result of flooding events related to Hurricane Harvey, the Arkema facility located in Crosby, TX suffered a loss of power and failure on refrigeration of manufacturing process. The loss of temperature control resulted in degradation and heating of organic peroxides, with the potential of creating a fire. As a precautionary measure, local authorities established a 1.5-mile radius evacuation zone around the facility.

On August 31, 2017, the Center for Toxicology and Environmental Health, LLC (CTEH®) was contacted by Arkema Inc. (Arkema) to initiate air monitoring and sampling around the community areas outside of the evacuation zone perimeter. This submittal summarizes the results of real-time air monitoring conducted by CTEH® personnel from 06:00 on September 3, 2017 to 06:00 on September 4, 2017. A map of the site location is provided in **Attachment A**.

2.0 Real-time Air Monitoring

All real-time air monitoring instrumentation was calibrated per the manufacturer's recommendations prior to air monitoring. Handheld, real-time air monitoring was conducted for benzene and volatile organic compounds (VOCs) using RAE Systems UltraRAE and MultiRAE instruments. Additionally, combustion byproducts potentially associated with fire smoke, such as particulate matter (PM_{2.5}), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂) were assessed using Gastec Tubes, DustTraks, and AM510s. **Table 1** summarizes the data for all real-time air monitoring readings recorded in Crosby, TX from 06:00 on September 3, 2017 through 06:00 on September 4, 2017. Maps of real-time air monitoring locations are provided as **Attachment B**.

Table 1 Real-time Handheld Air Monitoring Readings
06:00 September 3, 2017 – 06:00 September 4, 2017

Analyte	Instrument	Number of Readings	Number of Detections	Range of Detections*
Benzene	UltraRAE	27	0	< 0.025 ppm
CO	MultiRAE Plus	71	0	< 1.0 ppm
NO ₂	Gastec Tube 9L	3	0	< 0.1 ppm
	MultiRAE Plus	5	0	< 0.1 ppm
PM _{2.5}	AM510	142	142	0.020 - 0.213 mg/m ³
	Dusttrak	66	66	0.023 - 0.051 mg/m ³
SO ₂	MultiRAE Plus	65	0	< 0.1 ppm
VOCs	MultiRAE Plus	215	0	< 0.1 ppm

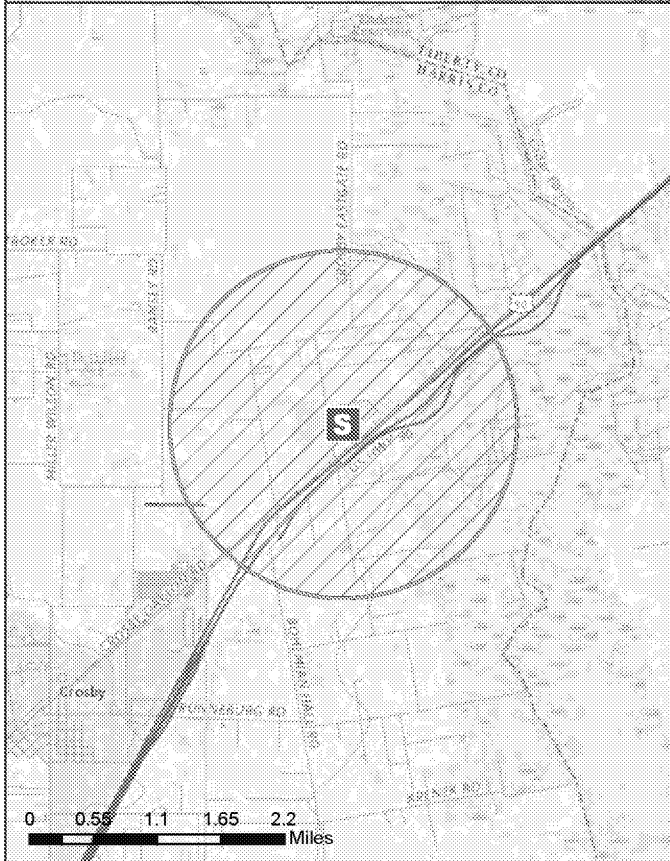
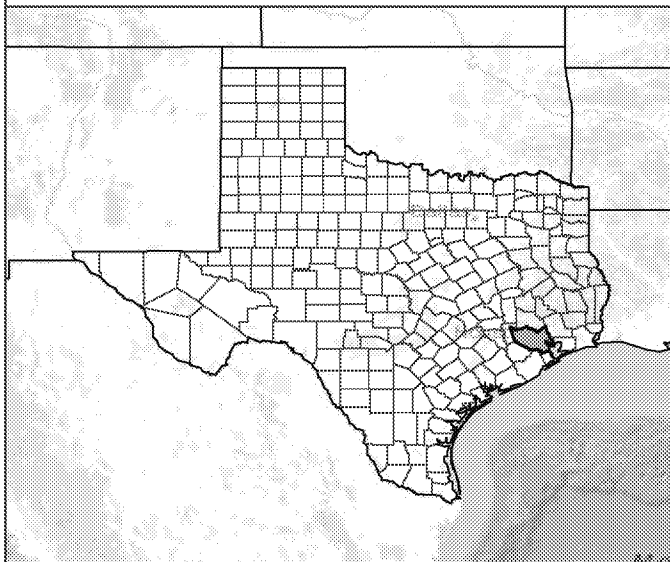
*If detections were not observed, the instrument detection limit is listed in this column.

3.0 Analytical Air Sampling

To supplement real-time air monitoring, CTEH® deployed areas along the perimeter of the evacuated area within the community. Evacuated canister (Minican™) samplers were regulated to collect air evenly over a 24-hr period. Analytical air samples will be submitted to SGS Galson Laboratories, an AIHA-accredited laboratory, for analysis using EPA Method TO-15. A map highlighting the analytical air sampling locations is provided as **Attachment C**. Analytical Air Sampling Results will be reported upon receipt from the laboratory.

Attachment A

Site Location Map



Legend

Site

1.5 Mile Buffer

Attachment B

Handheld Real-time Air Monitoring Locations



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/4/2017 10:21:35 AM

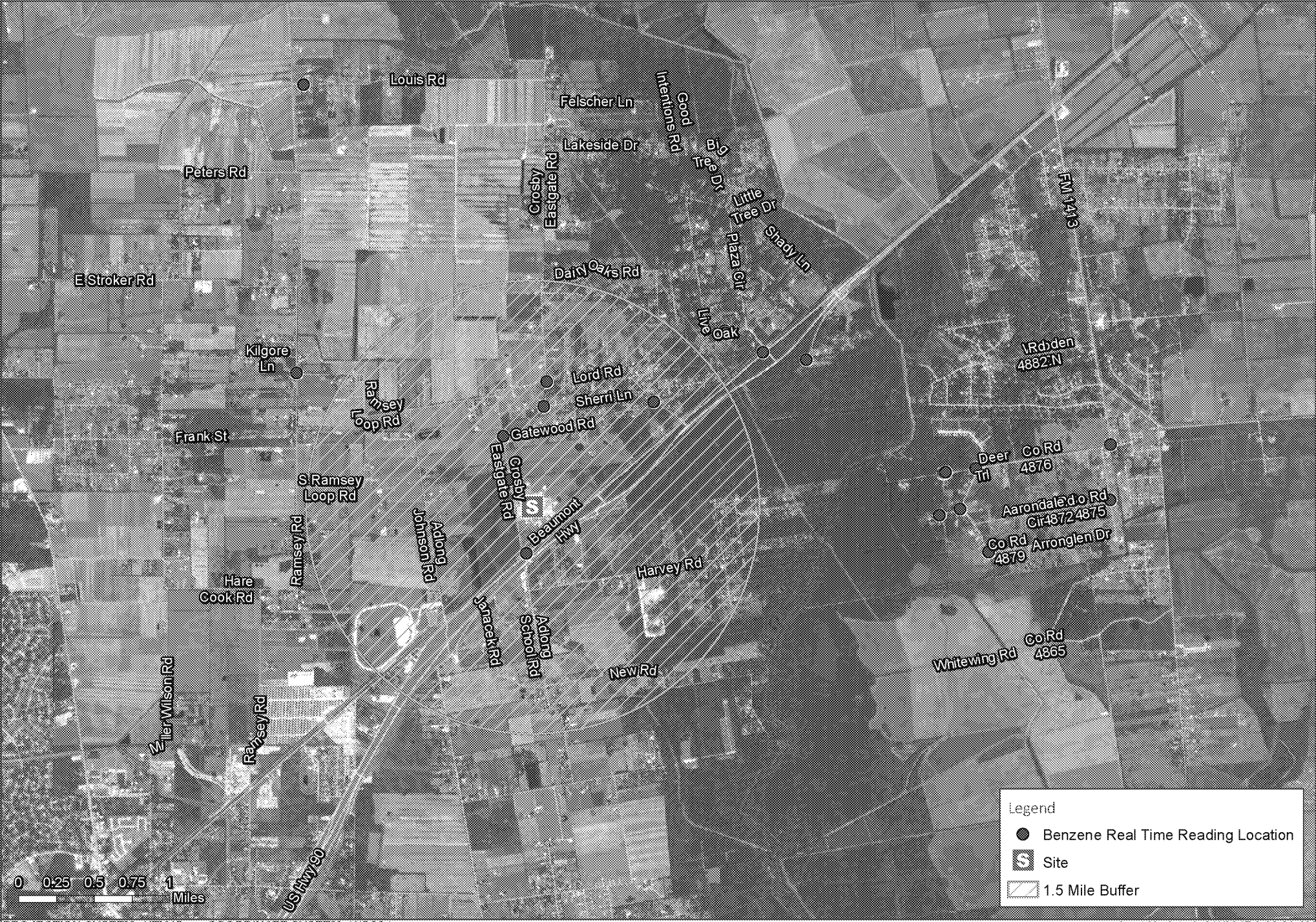


Benzene Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 3, 2017 to 06:00 September 4, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/4/2017 9:08:39 AM



Carbon Monoxide Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 3, 2017 to 06:00 September 4, 2017



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Nitrogen Dioxide Hand-held Real-time Reading Locations

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PM2.5 Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 3, 2017 to 06:00 September 4, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



Legend

- PM2.5 Real Time Reading Location
- Site
- ▨ 1.5 Mile Buffer

PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/4/2017 10:23:53 AM



Sulfur Dioxide Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 3, 2017 to 06:00 September 4, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



PROJECTION SYSTEM: UTM15 COORDINATE SYSTEM: WGS84

Last Updated: 9/4/2017 9:10:35 AM

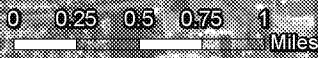
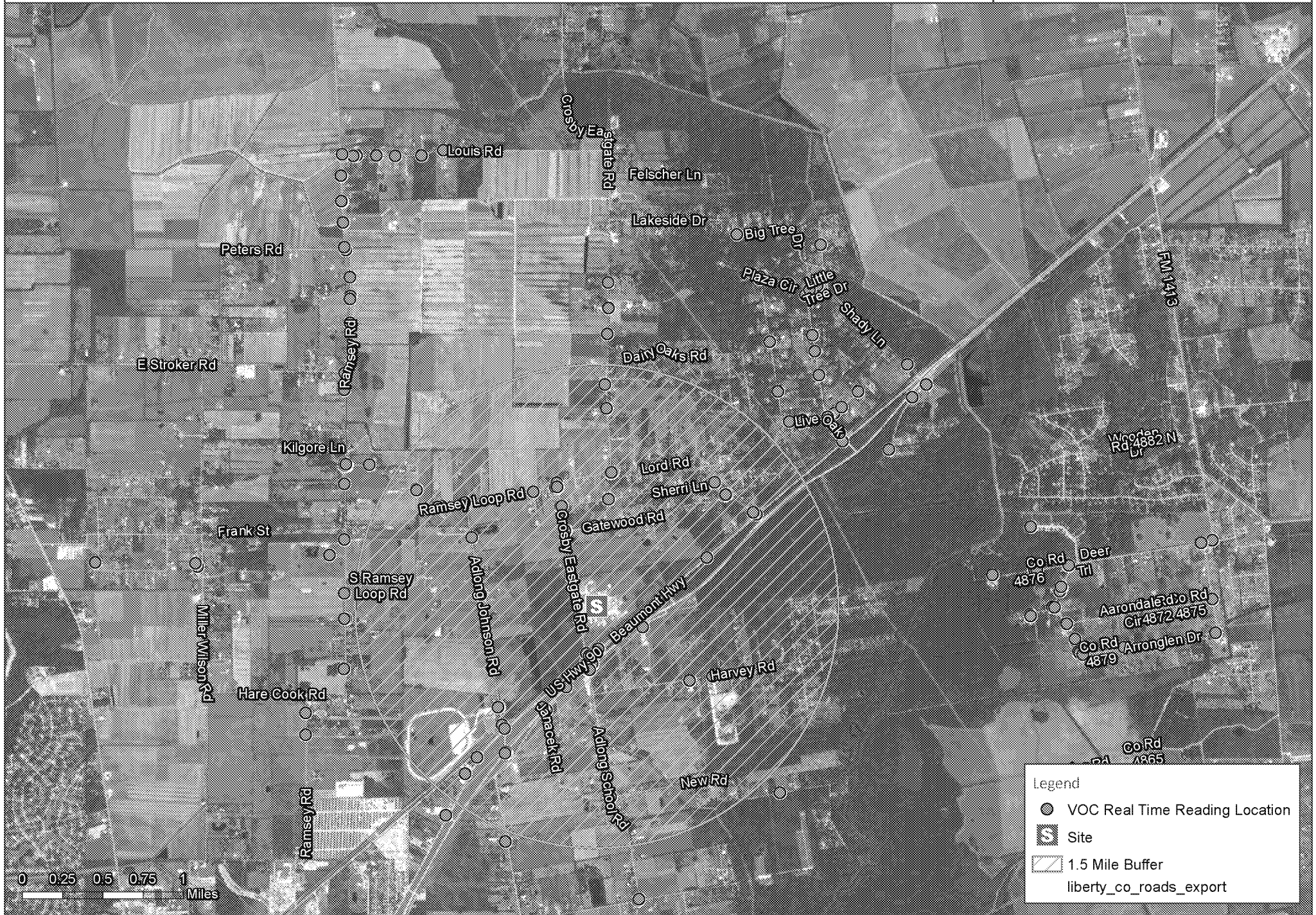


VOC Hand-held Real-time Reading Locations

Harvey Response - 06:00 September 3, 2017 to 06:00 September 4, 2017



Project: 109489
Client: Arkema
City: Crosby, TX
County: Harris



Legend

VOC Real Time Reading Location

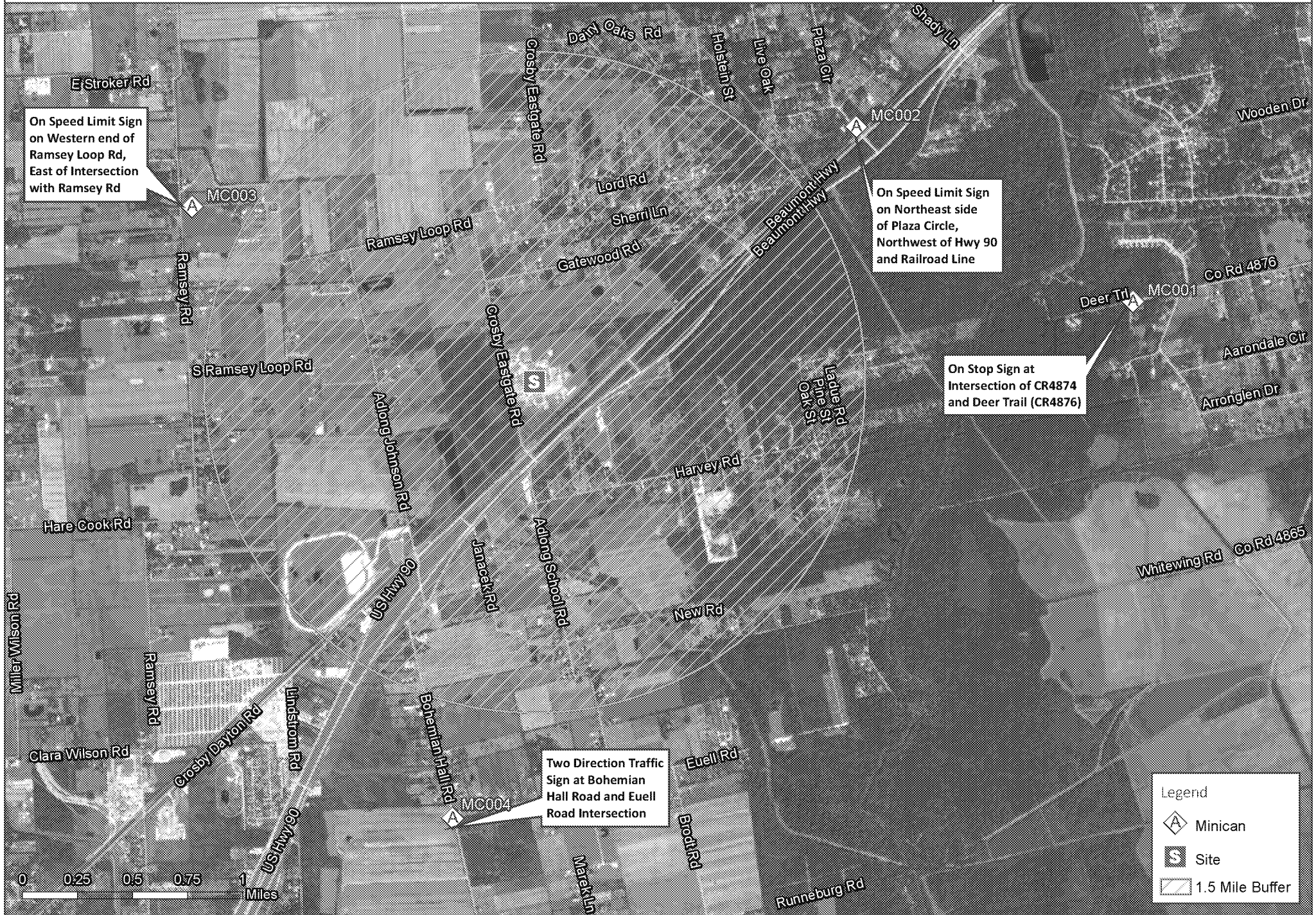
Site

1.5 Mile Buffer

liberty_co_roads_export

Attachment C

Map of Analytical Air Sampling Locations

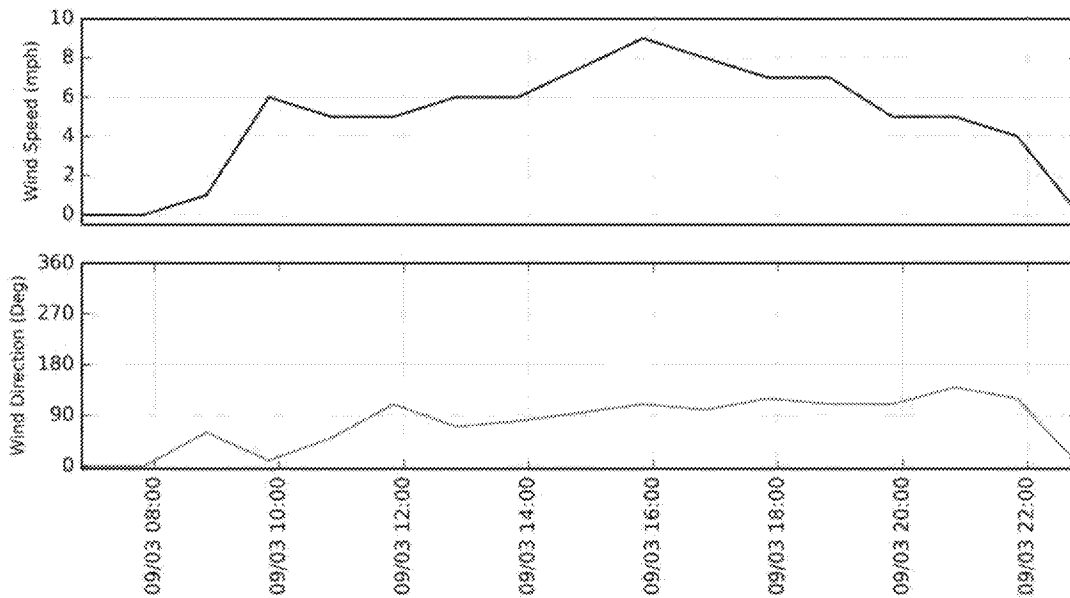
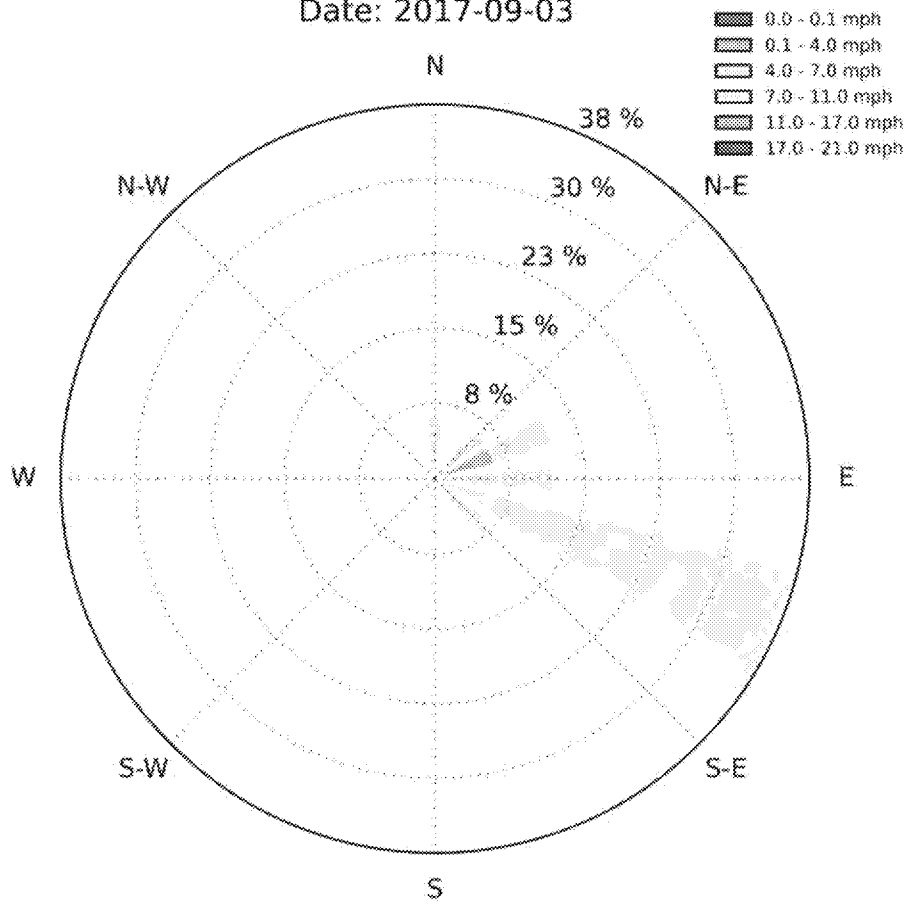


Attachment D

KHPY Windrose

(Highland Park Airport - 12.5 miles SSE of Site)

Weather Station: KHPY
Date: 2017-09-03



Weather Station: KHPY
Date: 2017-09-04

